

HISTORIC COLUMBIA RIVER HIGHWAY,
MULTNOMAH FALLS FOOTBRIDGE
(Benson Footbridge)
Troutdale vicinity
Multnomah County
Oregon

HAER No. OR-36-I

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
P.O. Box 37127
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HISTORIC AMERICAN ENGINEERING RECORD

HISTORIC COLUMBIA RIVER HIGHWAY,
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(Benson Footbridge)

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Location: Spanning the lower of two falls called Multnomah Falls on a pedestrian trail leading from the Multnomah Falls Lodge to the top of the falls, near the Historic Columbia River Highway, at milepost 32, Multnomah County, Oregon.

UTM: 10/569050/5047190
Quad: Multnomah Falls, Oreg.--Wash.

Date of Construction: 1914

Engineer: K. P. Billner, designing engineer, Oregon State Highway Department

Builder: Pacific Bridge Company, Portland
Robert L. Ringer, subcontractor

Owner: U.S. Forest Service, Columbia River Gorge National Scenic Area

Present Use: Pedestrian traffic

Significance: A reinforced-concrete arch pedestrian bridge over the Lower Multnomah Falls. One of the few bridges constructed on the highway strictly for pedestrian use.

Historian: Robert W. Hadlow, Ph.D., September 1995

Transmitted by: Lisa M. Pfueller, September 1996

PROJECT INFORMATION

This recording project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The HAER program is administered by the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) Division of the National Park Service, U.S. Department of the Interior. The Historic Columbia River Highway Recording Project was cosponsored in 1995 by HABS/HAER, under the general direction of Robert J. Kapsch, Ph.D., Chief, and by the Oregon Department of Transportation (ODOT), Bruce Warner, Region One Manager; in cooperation with the US/International Committee on Monuments and Sites (ICOMOS), the American Society of Civil Engineers (ASCE), and the Historic Columbia River Highway Advisory Committee.

Fieldwork, measured drawings, historical reports, and photographs were prepared under the direction of Eric N. DeLony, Chief of HAER; Todd A. Croteau, HAER Architect, and Dean A. Herrin, Ph.D., HAER Historian. The recording team consisted of Elaine G. Pierce (Chattanooga, Tennessee), Architect and Field Supervisor; Vladimir V. Simonenko (ICOMOS/Academy of Fine Arts, Kiev, Ukraine), Architect; Christine Rumi (University of Oregon) and Pete Brooks (Yale University), Architectural Technicians; Helen I. Selph (California State Polytechnic University, Pomona) and Jodi C. Zeller (University of Illinois, Urbana-Champaign), Landscape Architectural Technicians; Robert W. Hadlow, Ph.D. (ASCE/Pullman, Washington), Historian; and Jet Lowe (Washington, DC), HAER Photographer. Jeanette B. Kloos, ODOT Region One Scenic Area Coordinator, served as department liaison.

Additional information about the Historic Columbia River Highway can be found under the following HAER Nos.:

OR-36	HISTORIC COLUMBIA RIVER HIGHWAY
OR-36-A	HISTORIC COLUMBIA RIVER HIGHWAY, SANDY RIVER BRIDGE AT TROUTDALE
OR-36-B	HISTORIC COLUMBIA RIVER HIGHWAY, SANDY RIVER BRIDGE (Stark St. Bridge)
OR-36-C	HISTORIC COLUMBIA RIVER HIGHWAY, CROWN POINT VIADUCT
OR-36-D	HISTORIC COLUMBIA RIVER HIGHWAY, CROWN POINT
OR-24	LATOURELL CREEK BRIDGE
OR-23	SHEPPERDS DELL BRIDGE
OR-36-E	HISTORIC COLUMBIA RIVER HIGHWAY, BRIDAL VEIL FALLS BRIDGE
OR-36-F	HISTORIC COLUMBIA RIVER HIGHWAY, WAHKEENA FALLS FOOTBRIDGE

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OR-36-G HISTORIC COLUMBIA RIVER HIGHWAY, WEST MULTNOMAH FALLS
VIADUCT
OR-36-H HISTORIC COLUMBIA RIVER HIGHWAY, MULTNOMAH CREEK BRIDGE
OR-36-J HISTORIC COLUMBIA RIVER HIGHWAY, EAST MULTNOMAH FALLS
VIADUCT (Bridge No. 841)
OR-36-K HISTORIC COLUMBIA RIVER HIGHWAY, ONEONTA GORGE CREEK
BRIDGE
OR-36-L HISTORIC COLUMBIA RIVER HIGHWAY, ONEONTA TUNNEL
OR-36-M HISTORIC COLUMBIA RIVER HIGHWAY, HORSETAIL FALLS BRIDGE
OR-49 MOFFETT CREEK BRIDGE
OR-36-N HISTORIC COLUMBIA RIVER HIGHWAY, TOOTHROCK & EAGLE
CREEK VIADUCTS
OR-36-O HISTORIC COLUMBIA RIVER HIGHWAY, TOOTHROCK TUNNEL
OR-36-P HISTORIC COLUMBIA RIVER HIGHWAY, EAGLE CREEK BRIDGE
OR-36-Q HISTORIC COLUMBIA RIVER HIGHWAY, EAGLE CREEK RECREATION
AREA (Forest Camp)
OR-36-R HISTORIC COLUMBIA RIVER HIGHWAY, MITCHELL POINT TUNNEL
& VIADUCT (Tunnel of Many Vistas)
OR-36-T HISTORIC COLUMBIA RIVER HIGHWAY, MOSIER TWIN TUNNELS
OR-36-U HISTORIC COLUMBIA RIVER HIGHWAY, MOSIER CREEK BRIDGE
(Bridge No. 498)
OR-30 DRY CANYON CREEK BRIDGE
OR-27 MILL CREEK BRIDGE

For shelving purposes at the Library of Congress, Troutdale
vicinity in Multnomah County was selected as the "official"
location for the various structures in the Historic Columbia
River Highway documentation project (HAER No. OR-36).

HISTORIC COLUMBIA RIVER HIGHWAY

The Pacific Northwest's Columbia River Highway, later renamed the Historic Columbia River Highway (HCRH), was constructed between 1913 and 1922. It is one of the oldest scenic highways in the United States. Its design and execution were the products of two visionaries: Samuel Hill, lawyer, entrepreneur, and good roads promoter, and Samuel C. Lancaster, engineer and landscape architect, with the assistance of several top road and bridge designers. In addition, many citizens provided strong leadership and advocacy for construction of what they saw as "The King of the Roads."

Often, the terms "scenic highways" and "parkways" are used synonymously. Scenic highways are best described as those roads constructed to provide motorists with the opportunity to see up-close the landscape's natural beauty. Parkways are roads or streets often associated with city beautiful campaigns prevalent in the United States in the late 19th and early 20th centuries. They were part of a movement to create park-like settings out of wastelands. Many of the scenic highways in the United States are associated with the country's national park system and were built in the years following the First World War.

Beginning in the 1910s and early 1920s, the National Park Service (NPS) began construction of well-engineered paved roads with permanent concrete and masonry bridges and viaducts to make its park sites more accessible to an increasingly mobile tourist population. These included roads such as "Going-to-the-Sun Highway" in Glacier National Park and "All-Year Highway" in Yosemite National Park. The Historic Columbia River Highway, unlike many of its counterparts, was constructed through county-state cooperation. It became a state-owned trunk route or highway, part of a growing system of roads that criss-crossed Oregon.

Samuel Hill, once an attorney for James J. Hill and his large railroad empire, and later a Pacific Northwest investor and entrepreneur, was the state of Washington's most vocal good roads' spokesman in the late 19th and early 20th centuries. He promoted good roads at Seattle's Alaska-Yukon-Pacific Exposition in 1905, and shortly thereafter helped to establish the department of highway engineering at the University of Washington. With little success in convincing the Washington State Legislature to fund a major highway along the Washington side of the Columbia River, Hill found more receptive ears and pocketbooks with Oregon lawmakers and Portland area businessmen. Construction began on the Historic Columbia River Highway in

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1913. By 1922, it was complete, covered in a long-wearing and smooth-riding asphaltic-concrete pavement.¹

Hill hired Samuel Lancaster, an experienced engineer and landscape architect to design the Historic Columbia River Highway. Lancaster was noted for the boulevards that he created around Seattle's Lake Washington in the first decade of the 20th century as a component of the city's Olmsted-designed park system. In 1909 Lancaster became the first professor of highway engineering in Hill's department at the University of Washington. Lancaster had accompanied Hill and others to Paris in 1908 for the First International Road Congress, and afterwards the delegation toured western Europe to learn about Continental road-building techniques. Seeing roads in the park-like setting of the Rhine River Valley inspired Hill to build a highway along the Columbia River Gorge. By 1912, Lancaster was conducting road-building experiments at Hill's estate, Maryhill, 100 miles east of Portland on the Washington side of the Columbia. The route they subsequently created was not a parkway, in the truest sense, but instead a scenic highway.²

The Columbia River Gorge's natural features distinguish it as the ideal setting. This relationship between the natural landscape and the Historic Columbia River Highway was described best by locating engineer John Arthur Elliott. He wrote, "All the natural beauty spots were fixed as control points and the location adjusted to include them." The road passed several waterfalls and rock outcroppings, including Thor's Heights (Crown Point), Latourell Falls, Shepperd's Dell, Bishop's Cap, Multnomah Falls, Oneonta Gorge and Falls, Horsetail Falls, Wahkeena Falls, and Tooth Rock. Natural features were made an integral component of the HCRH.³

According to Lancaster, "There is but one Columbia River Gorge [that] God put into this comparatively short space, [with] so many beautiful waterfalls, canyons, cliffs and mountain domes." He believed that "men from all climes will wonder at its wild grandure [sic] when once it is made accessable [sic] by this great highway." In addition, the promoters sought to create a route that utilized the most advanced techniques available for road construction. In reflecting on the work's progress, Lancaster acknowledged that because of the country's rugged climate, with its wind and rain and winter weather, it had been "slow and tedious and somewhat more expensive than ordinary work." Nevertheless, he and his associates felt they were accomplishing a worthwhile task because, "for if the road is completed according to plans, it will rival if not surpass anything to be found in the civilized world."⁴

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In an more practical light, many observers saw the Historic Columbia River Highway as a lifeline connecting Portland with the many commercial and agricultural areas along the Columbia River. Some even envisioned it as part of a spider web of similarly constructed routes radiating out towards central and eastern Washington and northern Idaho, meeting routes leading to other parts of the region and nation.

The Historic Columbia River Highway was a technical and civic achievement of its time, successfully mixing sensitivity to the magnificent landscape and ambitious engineering. The highway has gained national significance because it represents one of the earliest applications of cliff-face road building as applied to modern highway construction. Lancaster emulated the European styles of road building in the Columbia River Gorge, while also designing and constructing a highway to advanced engineering standards. Throughout the route, engineers held fast to a design protocol that included accepting no grade greater than 5 percent, nor laying out a curve with less than a 200' turning radius. In rare cases where a tighter curve was used, Lancaster reduced grades and widened pavement. The use of reinforced-concrete bridges, combined with masonry guard rails, guard walls, and retaining walls brought together the new with the old - the most advanced highway structures with the tried and tested. In building the Historic Columbia River Highway, Lancaster artfully created an engineering achievement sympathetic to the natural landscape.⁵

In the days before the formation of a comprehensive state highway plan, Multnomah, Hood River, and Wasco Counties cooperated, sometimes unwillingly, with the newly-formed Oregon State Highway Commission (1913) in constructing the HCRH. Initially, a group of recently elected Multnomah County commissioners, strong supporters of the proposed route, resolved that the highway commission take charge of its road building activities, with access to \$75,000 in county tax revenues. Soon crews surveyed the route through Multnomah County and constructed one mile of road.

Boosters stumped for the route's completion to the Hood River County line. Local clubs sent out men and boys for weekend work parties to show public support for the undertaking. One photograph from the period, depicts work parties with picks and shovels in hand and placards such as "Gang No. 7, Portland Ad Club, Stalwarts," or "Gang No. 3, Portland Realty Board, We will ROCK the Earth." The highway received much patronage, although some citizens were less than enthusiastic about its construction. Opponents showed their views with placards declaring, "I WON'T WORK, To Hell With Good Roads, We Don't Own Autos." Many

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"mossbacks" had no use for good roads and were satisfied traveling the network of rutted, narrow, steeply-graded backwoods trails. Nevertheless, the public generally supported the highway's construction. Multnomah County Commissioners levied a direct tax sufficient to fund road building to the Hood River County line, and subsequently, the people voted a \$1 million bond issue to pave the road with asphalt.⁶

Other counties similarly supported this scenic highway innovation. In 1914, Hood River County voters approved the sale of \$75,000 in bonds to initiate their portion of the road's construction. Finally, in 1915, Wasco County commissioners financed a survey to locate the route through their jurisdiction. By 1916, though, the state highway commission was reorganized and given a greater mandate over state highway construction, taking much of it out of local hands. Passage of the Federal Aid Road Acts of 1916 and 1921 gave the Oregon State Highway Commission matching funding to complete the Historic Columbia River Highway through Wasco County, and eventually to complete the route to its eastern terminus at Pendleton, in Umatilla County, by the early 1920s. At the same time, the state, working with counties west of Portland, completed another portion of the Columbia River Highway to the sea at Astoria. Eventually it became part of the national highway system and was designated part of U.S. 30.⁷

By the late 1930s, construction of Bonneville Dam, a New Deal project aimed at providing flood control on the Columbia River and generating electricity, caused a realignment of a portion of the Historic Columbia River Highway near Tooth Rock and Eagle Creek, in eastern Multnomah County. It was evident that the old highway was too outdated to provide safe, efficient travel for modern motor traffic. By 1954 it was bypassed in its entirety from Troutdale to The Dalles by a new water-level route. This new road was subsequently upgraded to a four-lane divided roadway and eventually renamed Interstate 84. Only portions of the old route remained as a reminder of its early modern highway engineering accomplishments.

MULTNOMAH FALLS FOOTBRIDGE

Samuel Lancaster once wrote of Multnomah Falls that, "the setting is ideal. It is pleasing to look upon; and in every mood, it charms like magic, it woos like an ardent lover; it refreshes the soul; and invites to loftier, purer things." Lancaster and his associates believed that the site was one of the most significant destinations along the planned route of the Historic Columbia River Highway. The falls lie within a sheer-walled geologic alcove, formed by repeated freezing of waterfall

spray which seeped into cracks in the columnar basalt walls and broke loose small rock fragments. Because the wall is north facing, it retains moisture for much of the year and is covered with lush vegetation.⁸

Pioneers claimed that Multnomah Falls was at least 1,000 feet in height, and popular literature of the early 1900s ranked it as second tallest in the United States. In 1916 the U.S. Geological Survey calculated that Multnomah Falls had a total drop of 620'. The main falls of 542' drops over three basalt flows. A fourth flow causes the 69' lower falls (there is 9' vertical distance between falls). Taken together, they are the fourth longest waterfall in the U.S. Lancaster and his colleagues believed Multnomah Falls, along with the surrounding landscape, required special attention for developing it as a destination for motorists.⁹

No one knows for sure who named these cascades "Multnomah Falls." Meriwether Lewis of the Lewis and Clark Expedition and other nineteenth-century explorers mentioned the falls in their journals, but none gave them a name. Lewis A. McArthur, in his *Oregon Geographic Names* suggested that a S. G. Reed may have been the first to apply a name to them with the idea of trying to popularize points along the Columbia for steamboat excursions. "Multnomah" comes from a sub-group of American Indians of the Chinookan tribe and also is the name of the county in which the falls are located. For years prior to construction of the Multnomah Falls Footbridge, at least as early 1883, a timber bowstring truss bridge spanned the falls at the present bridge's location. No doubt it was a favorite stop for passengers traveling on the nearby Oregon-Washington Railroad and Navigation Co. (OWRN) main line running east from Portland, or on steamboat excursions up the Columbia. By at least 1891, the bridge was reinforced with additional timber bracing and cables, but it vanished by 1899.¹⁰

The Benson Bridge

One day while out at the site with Simon Benson, Lancaster remarked to the wealthy Portland lumberman and good roads enthusiast, that it would "be nice if there were a footbridge across the lower waterfall, with a path up to and across it so that visitors could . . . look up at that magnificent waterfall above, then without moving look down on the lower one into the pool below." Benson asked what it might cost and Lancaster calculated the figures on the back of an envelope. Benson then wrote out a check for the amount and directed Lancaster to build it. The resulting footbridge is a 45'-0" reinforced-concrete deck arch, 105' above the lower Multnomah Falls. The location

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provides a spectacular view of the upper falls. Benson later purchased nearly 1,000 acres along the Columbia River, including 140 acres around Multnomah Falls which he gave to Portland for a city park.¹¹

In 1914, the Pacific Bridge Company of Portland received the contract to construct the Crown Point Viaduct and several bridges along the 16-mile-long "waterfalls section" of the Historic Columbia River Highway, from Shepperds Dell Bridge to Horsetail Falls Bridge. As was common practice, the firm subcontracted portions of the work to other companies. Robert Lee Ringer, who previously completed an electric fountain on the state capitol grounds in Salem and had just completed the reinforced-concrete portions of the 500' viaduct at Crown Point subcontracted work on the Multnomah Falls Footbridge. Ringer reminisced in 1967 that the Pacific Bridge Company "was too large to be concerned with the little bridge over the falls, especially at the end of the season." As a "small-time contractor," who picked up "some lesser jobs along the highway," Ringer was ready and able to construct the bridge and finished it in the fall of 1914.¹²

The Larch Mountain Trail

On January 28, 1915, Lancaster recommended to the Progressive Business Men's Club of Portland that someone should build a trail from the base of Multnomah Falls, across the footbridge and then to the top of Larch Mountain, a distance of seven miles, because it afforded a beautiful view of the region. The Club raised several hundred dollars to finance the trail, and Simon Benson and his son Amos S. Benson pledged another \$3,000 for the fund. The United States Forest Service appropriated \$1,500 and agreed to survey and build the trail as well as construct a lookout on the top of Larch Mountain.¹³

The Forest Service sent out locating crews in April 1915, but Bridal Veil Lumbering Company and Crown-Willamette Paper Company, who owned land surrounding the proposed trail, protested its location on the grounds that bringing people into the forests increased the risk of fires. Nevertheless, Forest Service officials assuaged the lumber interests fears by convincing them that the trail actually facilitated fire fighting and could help lessen timber. In July 1915, the companies granted right-of-way for the trail. By early October, the trail was dedicated at the Larch Mountain Lookout.¹⁴

Meanwhile, Simon Benson, purchased several tracts of land along the Columbia River's south bank to preserve them for recreational use. On Labor Day 1915 he donated land including Multnomah Falls and Wahkeena Falls to the city of Portland, and

the parcel that later became Benson State Park. Still, land at the base of Multnomah Falls, near an OWRN siding, was out of his reach because the rail company held title to it. Finally, Portland Parks Superintendent C. P. Keyser persuaded the OWRN to donate the land for public use, but with the understanding that the city would build a lodge on the site.¹⁵

On June 7, 1916, Multnomah Falls was the scene of what historian Ronald J. Fahl called "an elaborate and idealized pageant commemorating the history and lore of the Columbia Gorge and dedicating the highway itself." The Multnomah Falls Footbridge was part of the backdrop of the natural amphitheater in front of the falls that served as the setting. A crowd of 10,000 participated in ceremonies featuring the Portland Rose Festival Queen and her royal entourage of King Joy, Miss Columbia, maids-in-waiting, crown bearers and the like. Promoters, politicians, and other dignitaries from throughout the Pacific Northwest participated in the HCRH's formal dedication.¹⁶

The Multnomah Falls Lodge and Footpath

When the Historic Columbia River Highway opened for travel in the Multnomah Falls section in 1915, it attracted concessionaires who catered to motorists' needs. In addition, some amenities were available at the nearby OWRN station house. Yet many early HCRH motorists wanted more. They were accustomed to having Sunday dinners of chicken, rabbit, or salmon at several places along the highway. These included Chanticleer Inn, Crown Point Chalet, Latourell Falls Chalet and its successor, Falls Villa, Bridal Veil Lodge, and Forrest Hall. Some even kept a few rooms for road weary travelers. So, in 1925 the city of Portland commissioned local architect A. E. Doyle to design a structure. Doyle had already completed several structures in Portland, including, the Multnomah County Central Public Library, the Meier and Frank Department Store, the U.S. National Bank Building, and the Benson Hotel. He created a 2½ story rustic masonry lodge for a site below the falls and near the highway. The firm of Waale-Shattuck constructed it for \$40,000.¹⁷

The lodge exterior was in the "Cascadian" style, using native split fieldstone laid irregularly and varying in shades from black and gray to brown and red. Its "Country English" form includes a steeply pitched cedar-shingled gable roof with dormers and massive chimneys. It was completed in 1925, and provided both meals and lodging for travelers. By 1927, the building was enlarged, and in the next 65 years has undergone several remodelings, both inside and out, but still retains its original charm and character. Since World War II, it has provided meals ranging from simple snacks to elegant dining, and houses a gift

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shop, public restrooms, and an interpretive center. The lodge is by no means "rustic" in the same sense as Civilian Conservation Corps and Works Progress Administration buildings constructed in the gorge in the 1930s. Instead it has a sense of restrained elegance that catered to wealthy Portlanders who ventured out of the city in their motor cars to "rough it" in the country.¹⁸

The lodge marks the beginning of the footpath that takes travelers to the Multnomah Falls Footbridge, to the top of the falls, and eventually another 6 miles to the top of Larch Mountain. The area between the lodge and the footbridge, along with adjoining stone walls, benches, and interpretive displays, has been remade and remodeled continually since the 1920s. Beginning in the late 1980s, Multnomah Falls Scenic Area came under the jurisdiction of the newly organized Columbia River Gorge National Scenic Area, with planning strategies for its future coordinated with similar U.S. Forest Service activities at other sites in the gorge.

DESIGN AND DESCRIPTION

The Multnomah Falls Footbridge is a reinforced-concrete structure consisting of one 45'-0" parabolic barrel deck arch anchored into rock cliffs. Curtain walls are made of spandrel columns topped with arched curtain walls. Railings are constructed of precast cylindrical balusters and beveled rail caps. The height from deck surface to top of balustrades is 3'-6". The top end of each 5"-diameter baluster is formed with halves of elliptical arches so that when assembled they created a course of miniature arches that echoed the spandrel walls. In addition, balusters were cast with additional collars, or astragals, near their ends for added detail. Total length of the structure is about 52'.¹⁹

Original designs for the Multnomah Falls Footbridge called for constructing a Melan arch over Lower Multnomah Falls, consisting of a light steel frame surrounded by concrete. It was an advantageous alternative because the structure's construction made centering unnecessary. Nevertheless, those involved in its design found upon further investigation that the cost of the steel frame was considerably higher than simple reinforcing. Further, the advantage of not having to erect falsework was reduced when plentiful free lumber became available after completion of the nearby West and East Multnomah Falls Viaducts and the Multnomah Creek Bridge on the Historic Columbia River Highway.²⁰

Robert Ringer, the subcontractor, wrote that, "the bridge had to be built 135 feet in the air above the base of operations

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at the foot of the lower falls. It was straight up a rocky cliff," he added "with water dashing over one side of it. It was a wild tangle of Nature and we had to climb on our hands and knees to reach the building site. We installed an aerial trolley operated by horses to put up all the materials." He fashioned a simple a wooden trussed arch bridge to suspend the formwork for the footbridge.²¹

Ringer added, "One day when the job was nearly completed, Mr. Benson Jr. [Amos S. Benson] visited us; and I asked him if it would be all right if I put my name on the bridge in the concrete as is done on famous projects. He readily gave assent." But, "when the bridge was completed, Mr. Benson, some friends, and the engineer of the Pacific Bridge Co. visited the site and we had a general jollification and everybody was happy except the bridge company engineer." The company representative "concealed his wrath from the guests, but he was furious to see my name on the bridge. After all, I was only a sub-contractor." Ringer had not yet been paid for his work and to assuage the engineer's anger he agreed "without any fussing to cement over the offensive letters." But, when he "was alone and attending to the last chores. [He] cleaned up the lettering and smeared it lightly with wet clay--to which cement will not adhere permanently--and carefully troweled the place over to match the rest of the deck." Ringer did not again visit Multnomah Falls and the footbridge for two years. "By that time the winter frosts had done their work and routed out the inscription, which reads--'R. L. Ringer, 1914.'"²²

The designer, K. P. Billner, used a combination of steel lacing and plates for the arch reinforcing and steel bar for the deck, spandrel columns and the railings. His skeleton for the barrel arch consisted of five ribs of lacing forming the vertical components of four compartments. The intrados surface of the arch, or bottoms of these compartments consisted of "3 Rib-hyrib" plates, while the extrados surface was made of steel straps. Glenn S. Paxson, Bridge Engineer for the Oregon State Highway Department speculated about the reinforcing in the spandrel columns in 1944. He wrote that "the 'two-rib' and 'three-rib' studs shown [in a construction drawing] as reinforcing for the spandrel columns are undoubtedly a Truscon Steel Company product." He went on to write that "about the time this bridge was built, thin partition walls were quite the fashion in building construction, and they often used an expanded metal vertical stud on which metal lath were attached and then plastered over." He suspected that the spandrel column reinforcement in the Multnomah Falls Footbridge were these studs.²³

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Billner also designed the Multnomah Creek Bridge (HAER No. OR-36-H), a reinforced-concrete road bridge at Multnomah Falls. Unlike the other reinforced-concrete arches on the HCRH that take the form of ribbed deck arches with spandrel columns, this 67-foot span is a barrel arch with solid spandrel walls. Both the road bridge and the footbridge receive heavy use at what is one of the most popular scenic areas in the state of Oregon.²⁴

REPAIR AND MAINTENANCE

Maintenance records on the Multnomah Falls Footbridge are incomplete through the mid 1930s. In July 1937, there was some concern over the unstable nature of the handrails on the span, and a year later they were repaired. On 29 July 1939, the city of Portland relinquished its land holdings and by 1943 its buildings in the Columbia River Gorge. It deeded Benson Park to the state and gave all land south of the OWRN right-of-way to the U.S. Forest Service. This included Multnomah Falls, the Multnomah Falls Lodge, and the footpath. They became additions to Columbia Gorge Park, which the Forest Service had formed in December 1915. In 1944 Assistant Regional Forester James Frankland corresponded with Oregon State Highway Department personnel concerning the U.S. Forest Service's plans for some repair work on the bridge's handrails and spandrel columns. Maintenance on the Benson Bridge from then to the present is unknown, but it has been regularly looked after as indicated by its generally clean appearance and evidence of recent deck work.²⁵

ENDNOTES

¹For good syntheses of the Pacific Northwest good roads' movement, see John Kevin Rindell, "From Ruts to Roads: The Politics of Highway Development in Washington State" (M.A. thesis, Washington State University, 1987) and Hugh M. Hoyt, Jr., "The Good Roads Movement in Oregon, 1900-1920" (Ph.D. diss., University of Oregon, 1966); Oral Bullard, *Lancaster's Road: The Historic Columbia River Scenic Highway* (Beaverton, OR: TMS Book Service, 1982): 31; Ronald J. Fahl, "S. C. Lancaster and the Columbia River Highway: Engineer as Conservationist," *Oregon Historical Quarterly* 74, no. 2 (June 1973): 112.

²Fahl, "S. C. Lancaster and the Columbia River Highway," 105-07.

³John Arthur Elliott, "The Location and Construction of the Mitchell Point Section of the Columbia River Highway" (C.E. thesis, University of Washington, 1929): 3.

⁴Samuel C. Lancaster to Amos S. Benson, 7 February 1914, folder "Multnomah County, 1914," box 4, RG 76A-90, Oregon State Archives, Salem.

⁵Dwight A. Smith, "Columbia River Highway Historic District: Nomination of the Old Columbia River Highway in the Columbia Gorge to the National Register of Historic Places, Multnomah, Hood River, and Wasco Counties, Oregon" (Salem, OR: Oregon Department of Transportation, Highway Division, Technical Services Branch, Environmental Section, 1984): 3.

⁶Ronald J. Fahl, "S. C. Lancaster and the Columbia River Highway: Engineer as Conservationist," *Oregon Historical Quarterly* 74, no. 2 (June 1973): 111; Samuel C. Lancaster, "The Revelation of Famous Highways: A Symposium," in *American Civic Annual* (n.p., 1929): 109.; see photograph in the Oregon Historical Society collection, negative no. 38744; C. Lester Horn, "Oregon's Columbia River Highway," *Oregon Historical Quarterly* 66, no. 3 (September 1965): 261.

⁷*Second Annual Report of the Engineer of the Oregon State Highway Commission* (Salem, 1916): 26-30.

⁸Samuel Christopher Lancaster, *The Columbia: America's Great Highway through the Cascade Mountains to the Sea*, 2d ed. (author, 1916): 71, quote; "Environmental Assessment, Multnomah Falls Site Plan," Columbia River Gorge National Scenic Area, Forest Service, U.S. Department of Agriculture (Hood River, OR, 1991): V-115.

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⁹Lewis A. McArthur, *Oregon Geographic Names*, 6th ed., revised and enlarged by Lewis L. McArthur (Portland: Oregon Historical Society Press, 1992): 602-03; John Eliot Allen, *The Magnificent Gateway: A Layman's Guide to the Geology of the Columbia River Gorge, Scenic Trips to the Northwest's Geologic Past--No. 1* (Forest Grove, OR: Timber Press, 1979): 89-91.

¹⁰See Meriwether Lewis's entry for 9 April 1806 in R. G. Thwaites, ed., *Original Journals of Lewis and Clark Expedition, 1804-1806* (New York: Arno Press, 1969): 4:258-61; but note that Lewis's reference to "Multnomah Falls" is about a cataract on the Columbia. McArthur, *Oregon Geographic Names*, 602-03; photographs of Multnomah Falls by Carelton E. Watkins show no bridge in 1867 but show one in the winter of 1884-85. See Marty Sherman, et al., *Columbia River Gorge, Discovering Oregon Series*, vol. 1 (Portland: Frank Amato Publications, 1984): 30-31; and "National Register of Historic Places Inventory--Nomination Form, Multnomah Falls Lodge and Footpath, Bridal Veil, Multnomah County, Oregon" by Jonathan C. Horn and Mary Stuart, 26 September 1980, item 8. See also late-nineteenth-century photographs of Multnomah Falls showing the wooden bridge, in the private collection of Steve Lehl, Bridal Veil, Oregon. The Oregon-Washington Railroad and Navigation Company (OWRN) had laid out its route in the 1880s along the Columbia River's south shore. Much of it was along the old Troutdale to The Dalles Road begun in the 1870s. See: "The Columbia Highway in Multnomah County," by Samuel C. Lancaster, in *First Annual Report of the Highway Engineer* (Salem, OR, 1914): 65-66; and Fred Lockley, *History of the Columbia River Valley, from The Dalles to the Sea* (Chicago: S. J. Clarke Publishing Co., 1928): 835-36.

¹¹K. P. Billner, "Some Bridges on the Columbia Highway," *Engineering News* 72, no. 24 (10 December 1914): 1147; Dwight A. Smith, et al., *Historic Highway Bridges of Oregon* (Portland: Oregon Historical Society, 1989): 143; C. Lester Horn, "Oregon's Columbia River Highway," *Oregon Historical Quarterly* 66, no. 3 (September 1965): 265; K. P. Billner, "Design Features of the Various Types of Reinforced Concrete Bridges Along the Columbia River Highway in Oregon," *Engineering and Contracting* 43, no. 6 (10 February 1915): 122.

¹²Robert Lee Ringer, "A 53-Year Secret," TMs [1967], located in "Multnomah Falls Bridge" file, Oregon State Historic Preservation Office, Salem, 1-2.

¹³"National Register of Historic Places Inventory--Nomination Form, Multnomah Falls Lodge," item 8, continuation page 1.

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¹⁴S. C. Lancaster to Crown Columbia Pulp and Paper Company, 26 March 1915, folder 2/30, Mss 2607, Oregon Historical Society, Portland; "National Register of Historic Places Inventory--Nomination Form, Multnomah Falls Lodge," item 8, continuation pages 1 and 2.

¹⁵Ibid., item 8, continuation page 2.

¹⁶Ronald J. Fahl, "S. C. Lancaster and the Columbia River Highway: Engineer as Conservationist, *Oregon Historical Quarterly* 74, no. 2 (June 1973): 123 and 140 (note 81).

¹⁷"National Register of Historic Places Inventory--Nomination Form, Multnomah Falls Lodge," item 7 and item 8, continuation page 2.

¹⁸"Highway Lodge to Open July 1," *Portland Oregon Journal*, 21 June 1925, p. 13; "HAER Inventory--Multnomah Falls Lodge," in "Columbia River Highway Inventory of Historic Places," Columbia River Highway Project (Cascade Locks, OR, 1981); "National Register of Historic Places Inventory--Nomination Form, Multnomah Falls Lodge and Footpath," item 7, continuation pages 3-4; item 8, continuation page 2; "Environmental Assessment, Multnomah Falls Site Plan," V-116.

¹⁹"Reinforced Concrete Arch Bridge over Lower Multnomah Falls, Office of Oregon Highway Commission, Nov. 14, 1913," Drawing No. 306, in Maintenance Files, Bridge No. 4534, Bridge Section, ODOT, Salem; Ringer, "A 53-Year Secret," 1-2.

²⁰"Reinforced Concrete Bridges on the Columbia Highway in Multnomah County," *First Annual Report of the State Highway Engineer* (Salem, 1914): 188-89.

²¹Ringer, "A 53-Year Secret," 1-2.

²²Ringer, "A 53-Year Secret," 1-2.

²³G. S. Paxson, Bridge Engineer, to James Frankland, Assistant Regional Forester, U.S. Forest Service, 10 February 1944, in Bridge No. 4534, Maintenance Files, Bridge Section, ODOT, Salem.

²⁴"Reinforced Concrete Arch Bridge over Lower Multnomah Falls, Office of Oregon Highway Commission, Nov. 14, 1913."

²⁵"Bridge Repairs at Falls Urged," *Portland Oregon Journal*, (18 September 1937): 6. The city of Portland ended its connection with Multnomah Falls Lodge on 29 December 1943, see

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"National Register of Historic Places Inventory--Nomination Form, Multnomah Falls Lodge," item 8, continuation page 2. See the correspondence series: James Frankland to R. H. Baldock, State Highway Engineer, 18 January 1944; Baldock to Frankland, 31 January 1944; Baldock, by G. S. Paxson, to Frankland, 3 February 1944; Frankland to Paxson, 7 February 1944, and Paxson to Frankland, 10 February 1944, in Bridge No. 4534, Maintenance Files, Bridge Section, ODOT, Salem.

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DATA LIMITATIONS

Research materials for the Multnomah Falls Footbridge are
found in state highway engineer reports, Multnomah County
Roadmaster records, state highway department correspondence and
in published articles from the time of construction. Locating
U.S. Forest Service records for the post 1943 period might yield
information concerning maintenance over the past half-century.